

Exercise 11

For the following exercises, find $f^{-1}(x)$ for each function.

$$f(x) = \frac{x}{x+2}$$

Solution

Switch the roles of x and y .

$$x = \frac{y}{y+2}$$

Solve for y .

$$x \times (y+2) = \frac{y}{y+2} \times (y+2)$$

$$xy + 2x = y$$

$$xy + 2x - y = 0$$

$$xy - y = -2x$$

$$(x-1)y = -2x$$

$$y = -\frac{2x}{x-1}$$

Therefore,

$$f^{-1}(x) = -\frac{2x}{x-1}$$

